

What is claimed is:

1. A method for optically multiplexing laser light,
comprising the steps of:

emitting, from a plurality of semiconductor lasers,
5 light beams having parallel optical axes, coplanar slow axes,
and fast axes;

changing the directions of the fast axes of the light
beams at different positions along the direction in which the
light beams propagate, so that the fast axes of the light beams
10 become coplanar; and

converging a bundle of the light beams having the
coplanar fast axes in the directions of the fast axes and the
slow axes of the light beams, and making the converged bundle
of the light beams enter an optical fiber.

2. A laser light multiplexing apparatus comprising:

a laser block on which a plurality of semiconductor
lasers each having active layers, which are coplanar with
respect to each other, are arranged;

a collimating optical system which collimates the light
20 beams in such a manner that slow axes of the light beams are
coplanar, and the optical axes of the light beams are parallel
to each other;

a light beam rearrangement optical system, which
includes a plurality of prisms respectively arranged
25 corresponding to each of said light beams, for rearranging the
light beams in such a manner that directions of the fast axes

of the light beams are changed at different locations along the direction in which the light beams propagate, and the fast axes of the light beams become coplanar; and

a convergence optical system which converges a bundle of the light beams rearranged by the light beam rearrangement optical system, in directions of the fast axes and the slow axes of the light beams, and makes the converged bundle of the light beams enter an optical fiber.

3. A laser light multiplexing apparatus according to claim 2, wherein said collimating optical system comprises a plurality of truncated lenses.

4. A laser light multiplexing apparatus according to claim 2, further comprising:

additional semiconductor lasers which emit additional light beams; and

a polarization multiplex means which performs polarization multiplexing of said additional light beams and said light beams in optical paths of the light beams between said plurality of semiconductor lasers and said optical fiber so that said additional light beams also enter said optical fiber.

5. A laser light multiplexing apparatus according to claim 3, further comprising:

additional semiconductor lasers which emit additional light beams; and

a polarization multiplex means which performs

polarization multiplexing of said additional light beams and said light beams in optical paths of the light beams between said plurality of semiconductor lasers and said optical fiber so that said additional light beams also enter said optical fiber.

6. A laser light multiplexing apparatus according to claim 2, further comprising:

additional semiconductor lasers which emit additional light beams; and

a wavelength multiplex means which performs wavelength multiplexing of said additional light beams and said light beams in optical paths of the light beams between said plurality of semiconductor lasers and said optical fiber so that said additional light beams also enter said optical fiber.

7. A laser light multiplexing apparatus according to claim 3, further comprising:

additional semiconductor lasers which emit additional light beams; and

a wavelength multiplex means which performs wavelength multiplexing of said additional light beams and said light beams in optical paths of the light beams between said plurality of semiconductor lasers and said optical fiber so that said additional light beams also enter said optical fiber.